GENETIC ALGORITHM OPERATION USING PARALLEL PROCESS

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The genetic algorithm is based on the theory of natural selection so that it has proven to be relative robust means to search for global optimum. It is quickly converged near to the global optimum point without auxiliary information such as differentiation of function, but it takes a lot of iterations for finding the fine optimum point. Genetic algorithm takes much computation time if it has lots of population number in case of a large design problem. Using the parallel processing with several personal computers can reduce the design period. There are two ways in the parallel processing. One is fine-grained method; the other is coarse-grained method. Coarse-grained method is selected in order to design the mechanical system with commercial packages. The design domain is equally divided for one way of equilibrium assignments of each process in coarse-grained method. But this method can be no effects if initial design domain contains large parts of infeasible design space. So, the method of selecting the initial design domain is proposed using the ratio of the feasible population and infeasible populations in initial populations.
Some example problems are solved using Message Passing Interface library.

References

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